

WHAT IS CLAIMED IS:

1. An insulating bobbin mounted on a tooth extending from an annular yoke of a stator with a rectangular wire being around the insulating bobbin, comprising:

a tooth insulating portion insulating the tooth of the stator and the rectangular wire; and

an extending portion extending from an end portion of the tooth insulating portion along an inner surface of the yoke,

wherein a guide groove guiding the rectangular wire diagonally relative to a circumferential direction of the tooth insulating portion from an outside of the extending portion is provided in a side of the extending portion on one of axial sides of the stator.

2. An insulating bobbin as set forth in Claim 1, wherein an inclination angle of the guide groove relative to the circumferential direction of the tooth insulating portion is set equal to or larger than an angle θ which is expressed by the following equation;

$$\theta = \tan^{-1} (W_w / W_t)$$

wherein W_w represents a width of the rectangular wire, and W_t represents a width of the tooth insulating portion.

3. An insulating bobbin as set forth in Claim 1, wherein a bottom surface of the guide groove is made up of an inclined surface which inclines inwardly in the axial direction of the stator as the bottom surface approaches the tooth insulating portion along a longitudinal direction of the guide groove.

4. An insulating bobbin as set forth in Claim 3, wherein the bottom surface of the guide groove is made up of an inclined surface which inclines inwardly in the axial direction of the stator as the bottom surface approaches the tooth insulating portion along a widthwise direction of the guide groove, and wherein the bottom surface of the guide groove connects continuously to a side of the tooth insulating portion without any difference in level.

5. An insulating bobbin as set forth in Claim 1, wherein an intersection point between an inner side of the extending portion and an outer side of the guide groove is positioned outwardly of a side of the tooth insulating portion where the rectangular wire is bent for the first time by a distance equal to or larger than a thickness of the rectangular wire.

6. An insulating bobbin as set forth in Claim 1, wherein a height of a highest point of a line of intersection between a rectangular wire for a first layer and a rectangular for a second wire is set equal to or smaller than a height being 1.5 times as large as the thickness of the rectangular wire from the side of the tooth insulating portion.

7. A stator, comprising:

an insulating bobbin mounted on a tooth extending from an annular yoke of a stator with a rectangular wire being around the insulating bobbin, including:

a tooth insulating portion insulating the tooth of the stator and the rectangular wire; and

an extending portion extending from an end portion of the tooth insulating portion along an inner surface of the yoke,

wherein a guide groove guiding the rectangular wire diagonally relative to a circumferential direction of the tooth insulating portion from an outside of the extending portion is provided in a side of the extending portion on one of axial sides of the stator,

wherein the teeth are provided of an annular yoke at predetermined intervals in a circumferential

direction,

wherein the insulating bobbin is mounted on each of the teeth, and

wherein a rectangular wire is wound around the insulating bobbin.

8. An insulating bobbin as set forth in Claim 1, wherein the rectangular wire for an outermost layer is extended diagonally from a start-winding position thereof on one edge side of the insulating bobbin toward the other edge side thereof to the following line so as to straddle a space equivalent to one line so as to provide a recessed portion and then wound around a plurality of turns to form a diagonal extending portion, and thereafter is wound across the diagonal extending portion in a direction in which the rectangular wire diagonally intersects with the diagonal extending portion so as to be wound into the recessed portion.

9. An insulating bobbin as set forth in Claim 1, wherein a chamfered portion is formed at a corner portion of the bobbin and a tapered portion is provided on an inside of the chamfered portion.

10. A method for manufacturing a stator including an

insulating bobbin having a tooth insulating portion insulating the tooth of the stator and the rectangular wire, an extending portion extending from an end portion of the tooth insulating portion along an inner surface of the yoke and a guide groove guiding a rectangular wire diagonally relative to a circumferential direction of the tooth insulating portion from an outside of an extending portion on one of axial sides of the stator, comprising steps of:

providing a plurality of teeth on the stator at predetermined intervals in a circumferential direction thereof;

mounting insulating bobbins on the plurality of teeth;

winding concentrically a rectangular wire around the insulating bobbin in an aligned fashion;

causing a rectangular wire for an outermost layer to extend diagonally from a start-winding position thereof on one edge side of the insulating bobbin toward the other edge side thereof to the following line so as to straddle a space equivalent to one line so as to provide a recessed portion and then winding the rectangular wire a plurality of turns to form a diagonal extending portion; and

winding the rectangular wire so diagonally extended

across the diagonal extending portion in a direction in which the rectangular wire diagonally intersects with the diagonal extending portion so as to be wound into the recessed portion.

11. An insulating bobbin mounted on a tooth extending from an annular yoke of a stator with a rectangular wire being around the insulating bobbin, comprising:

a tooth insulating portion insulating the tooth of the stator and the rectangular wire; and

an extending portion extending from an end portion of the tooth insulating portion along an inner surface of the yoke,

wherein a guide groove guiding the rectangular wire to the outside is provided in a side where the end-winding end of the rectangular portion is located.